WHAT IS CLAIMED IS:

1. A coding device, comprising:

a decoder for decoding a first stream signal in which a first video stream including a first video stream information generated by coding a first video signal and a first audio stream including a first audio stream information generated by coding a first audio signal are multiplexed; and

a re-encoder for generating, based on the decoded first stream signal, a second video stream including a second video stream information having a bit rate lower than the first video stream information and a second audio stream including a second audio stream information having a bit rate lower than the first audio stream information, and multiplexing the second video stream and the second audio stream to generate a second stream signal.

2. A coding device according to claim 1, wherein:

the first audio stream information is obtained by performing a time-frequency conversion on the first audio signal into a frequency domain signal to quantize the frequency domain signal;

the re-encoder calculates psychoacoustic model information indicating frequency bands of the first audio signal masked by auditory characteristics; and

the re-encoder converts, based on the psychoacoustic model information, the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information to generate the second audio stream.

3. A coding device according to claim 2, wherein:

the quantization of the frequency domain signal is performed to indicate frequency spectrums for respective frequency bands of the frequency domain signal by mantissa parts and exponent parts;

each of the exponent parts is a scale factor of each of the frequency spectrums for the respective frequency bands;

the re-encoder calculates the psychoacoustic model information based on the scale factors of the frequency spectrums for the respective frequency bands included in the quantized frequency information; and

the re-encoder converts the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information by reallocating, based on the psychoacoustic model information, the number of bits allocated to the mantissa parts.

4. A coding device according to claim 2, wherein:

the quantization of the frequency domain signal is performed to indicate frequency spectrums for respective frequency bands of the frequency domain signal by mantissa parts and exponent parts;

each of the exponent parts is a scale factor of each of the frequency spectrums for the respective frequency bands;

the re-encoder calculates the psychoacoustic model information based on dequantized frequency spectrums for the respective frequency bands generated by dequantizing the first audio stream information; and

the re-encoder converts the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information

by reallocating, based on the psychoacoustic model information, the number of bits allocated to the mantissa parts.

5. A coding device according to claim 4, wherein when performing downmix processing so as to reduce the number of channels of the second audio stream to less than the number of channels of the first audio stream, the re-encoder calculates the psychoacoustic model information based on dequantized frequency spectrums for the respective frequency bands on which downmix processing has been performed.

6. A coding device according to claim 1, further comprising:

a receiving section for receiving the first stream signal,

a control section for indicating to the re-encoder bit rates of the second video stream information and the second audio stream information, and

a recording section for recording the second stream signal on a recording medium.

7. A coding method, comprising:

a first step of decoding a first stream signal in which a first video stream including a first video stream information generated by coding a first video signal and a first audio stream including a first audio stream information generated by coding a first audio signal are multiplexed; and

a second step of generating, based on the decoded first stream signal, a second video stream including a second video stream information having a bit rate lower than the first video stream information and a second audio stream

including a second audio stream information having a bit rate lower than the first audio stream information, and multiplexing the second video stream and the second audio stream to generate a second stream signal, wherein

the first audio stream information is obtained by performing a time-frequency conversion on the first audio signal into a frequency domain signal to quantize the frequency domain signal, and

the second step includes:

a third step of calculating psychoacoustic model information indicating frequency bands of the first audio signal masked by auditory characteristics; and

a fourth step of converting, based on the psychoacoustic model information, the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information to generate the second audio stream.

8. A coding method according to claim 7, wherein:

the quantization of the frequency domain signal is performed to indicate frequency spectrums for respective frequency bands of the frequency domain signal by mantissa parts and exponent parts;

each of the exponent parts is a scale factor of each of the frequency spectrums for the respective frequency bands;

the third step calculates the psychoacoustic model information based on the scale factors of the frequency spectrums for the respective frequency bands included in quantized information; and

the fourth step converts the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information

by reallocating, based on the psychoacoustic model information, the number of bits allocated to the mantissa parts.

9. A coding method according to claim 7, wherein:

the quantization of the frequency domain signal is performed to indicate frequency spectrums for respective frequency bands of the frequency domain signal by mantissa parts and exponent parts;

each of the exponent parts is a scale factor of each of the frequency spectrums for the respective frequency bands;

the third step calculates the psychoacoustic model information based on dequantized frequency spectrums for the respective frequency bands generated by dequantizing the first audio stream information; and

the fourth step converts the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information by reallocating, based on the psychoacoustic model information, the number of bits allocated to the mantissa parts.

10. A coding method according to claim 9, wherein when performing downmix processing so as to reduce the number of channels of the second audio stream to less than the number of channels of the first audio stream, the third step calculates the psychoacoustic model information based on dequantized frequency spectrums for the respective frequency bands on which downmix processing has been performed.

11. A program for causing a computer to execute coding

processing, the coding processing comprising:

a first step of decoding a first stream signal in which a first video stream including a first video stream information generated by coding a first video signal and a first audio stream including a first audio stream information generated by coding a first audio signal are multiplexed; and

a second step of generating, based on the decoded first stream signal, a second video stream including a second video stream information having a bit rate lower than the first video stream information and a second audio stream including a second audio stream information having a bit rate lower than the first audio stream information, and multiplexing the second video stream and the second audio stream to generate a second stream signal, wherein

the first audio stream information is obtained by performing a time-frequency conversion on the first audio signal into a frequency domain signal to quantize the frequency domain signal, and

the second step includes:

a third step of calculating psychoacoustic model information indicating frequency bands of the first audio signal masked by auditory characteristics; and

a fourth step of converting, based on the psychoacoustic model information, the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information to generate the second audio stream.

12. A program according to claim 11, wherein:

the quantization of the frequency domain signal is performed to indicate frequency spectrums for respective frequency bands of the frequency domain signal by mantissa

parts and exponent parts;

each of the exponent parts is a scale factor of each of the frequency spectrums for the respective frequency bands;

the third step calculates the psychoacoustic model information based on the scale factors of the frequency spectrums for the respective frequency bands included in quantized information; and

the fourth step converts the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information by reallocating, based on the psychoacoustic model information, the number of bits allocated to the mantissa parts.

13. A program according to claim 11, wherein:

the quantization of the frequency domain signal is performed to indicate frequency spectrums for respective frequency bands of the frequency domain signal by mantissa parts and exponent parts;

each of the exponent parts is a scale factor of each of the frequency spectrums for the respective frequency bands;

the third step calculates the psychoacoustic model information based on dequantized frequency spectrums for the respective frequency bands generated by dequantizing the first audio stream information; and

the fourth step converts the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information by reallocating, based on the psychoacoustic model information, the number of bits allocated to the mantissa parts.

14. A program according to claim 13, wherein when performing downmix processing so as to reduce the number of channels of the second audio stream to less than the number of channels of the first audio stream, the third step calculates the psychoacoustic model information based on dequantized frequency spectrums for the respective frequency bands on which downmix processing has been performed.

15. A computer-readable recording medium having a program for causing a computer to execute coding processing thereon, the coding processing comprising:

a first step of decoding a first stream signal in which a first video stream including a first video stream information generated by coding a first video signal and a first audio stream including a first audio stream information generated by coding a first audio signal are multiplexed; and

a second step of generating, based on the decoded first stream signal, a second video stream including a second video stream information having a bit rate lower than the first video stream information and a second audio stream including a second audio stream information having a bit rate lower than the first audio stream information, and multiplexing the second video stream and the second audio stream to generate a second stream signal, wherein

the first audio stream information is obtained by performing a time-frequency conversion on the first audio signal into a frequency domain signal to quantize the frequency domain signal, and

the second step includes:

a third step of calculating psychoacoustic model information indicating frequency bands of the first

audio signal masked by auditory characteristics; and

a fourth step of converting, based on the psychoacoustic model information, the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information to generate the second audio stream.

16. A computer-readable medium according to claim 15, wherein:

the quantization of the frequency domain signal is performed to indicate frequency spectrums for respective frequency bands of the frequency domain signal by mantissa parts and exponent parts;

each of the exponent parts is a scale factor of each of the frequency spectrums for the respective frequency bands;

the third step calculates the psychoacoustic model information based on the scale factors of the frequency spectrums for the respective frequency bands included in quantized information; and

the fourth step converts the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information by reallocating, based on the psychoacoustic model information, the number of bits allocated to the mantissa parts.

17. A computer-readable medium according to claim 15, wherein:

the quantization of the frequency domain signal is performed to indicate frequency spectrums for respective frequency bands of the frequency domain signal by mantissa parts and exponent parts;

each of the exponent parts is a scale factor of each of the frequency spectrums for the respective frequency bands;

the third step calculates the psychoacoustic model information based on dequantized frequency spectrums for the respective frequency bands generated by dequantizing the first audio stream information; and

the fourth step converts the first audio stream information into the second audio stream information having a bit rate lower than the first audio stream information by reallocating, based on the psychoacoustic model information, the number of bits allocated to the mantissa parts.

18. A computer-readable medium according to claim 17, wherein when performing downmix processing so as to reduce the number of channels of the second audio stream to less than the number of channels of the first audio stream, the third step calculates the psychoacoustic model information based on dequantized frequency spectrums for the respective frequency bands on which downmix processing has been performed.